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09/627,421	07/27/2000	Atsushi Murashima	017446/0305q	1185

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AZAD, ABUL K

ART UNIT	PAPER NUMBER
2654	8

DATE MAILED: 08/12/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/627,421	MURASHIMA, ATSUSHI	
	Examiner	Art Unit	
	ABUL K. AZAD	2654	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 05 May 2003.

2a) This action is **FINAL**. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-20 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) Claim(s) 10-18 and 20 is/are allowed.

6) Claim(s) 1-9 and 19 is/are rejected.

7) Claim(s) _____ is/are objected to.

8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) The proposed drawing correction filed on _____ is: a) approved b) disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12) The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All b) Some * c) None of:

1. Certified copies of the priority documents have been received.

2. Certified copies of the priority documents have been received in Application No. _____.

3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) The translation of the foreign language provisional application has been received.

15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) Notice of References Cited (PTO-892)

2) Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____

4) Interview Summary (PTO-413) Paper No(s). _____

5) Notice of Informal Patent Application (PTO-152)

6) Other: _____

DETAILED ACTION

Response to Amendment

1. This action is in response to the communication filed on May 5, 2003.
2. Claims 1-20 are pending in this action. Claims 1, 10, 19 and 20 have been amended.
3. The applicant's arguments with respect to claims 1-9, and 19 have been fully considered but they are not deemed to be persuasive. For examiner's response to the applicant's arguments or comments, see the detailed discussion in the Response to the Arguments section.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-4, 7, 8 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Admitted prior art in view of Su et al. (US 6,122,611).

As per claim 1, Admitted prior art teaches, "a speech signal decoding method comprising the steps of":

"decoding information containing at least a sound source signal, a gain, and filter coefficients from a received bit stream" (Fig. 4, element 10 encoded data, which contains sound source signal, a gain and filter coefficients from the bit stream);

"performing smoothing processing based on the decoded information for at least either one of the decoded gain and the decoded filter coefficients in the unvoiced speech"(Fig. 4, element 1120, second gain decoding circuit and element 1020, LSP (filter coefficients) decoding circuit); and

"decoding the speech signal by driving a filter having the decoded filter coefficients by an excitation signal obtained by multiplying the decoded sound source signal by the decoded gain using a result of the smoothing processing" (Fig. 4, element 1020, LSP decoding circuit and element 1110, first gain decoding circuit).

Admitted prior art does not explicitly teach, "identifying voiced speech and unvoiced speech of a speech signal using the decoded information". However, Su teaches, "identifying voiced speech and unvoiced speech of a speech signal using the decoded information" (Fig. 5, element 506, voice activity detector, where voice activity detector identify voiced speech and unvoiced speech signal using the decoded information, more details at col. 5, lines 1-19). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use Su's teaching in the invention of Admitted known art because Su teaches his invention provides out put speech, sounds more natural to the human ear, a person with ordinary skill would readily recognized it as an advantage (col. 5, lines 27-28).

As per claim 2, the claim limitations are rejected based on the rationale given to claim 1 above and further the Admitted prior art teaches, "the step of performing smoothing processing comprises the step of performing smoothing processing in

accordance with a classification result of the unvoiced speech for at least either one of the decoded gain and the decoded filter coefficients in the unvoiced speech" (Fig. 4, element 1120, second gain decoding circuit and element 1020, LSP (filter coefficients) decoding circuit).

Admitted prior art does not explicitly teach, "wherein the method further comprises the step of classifying unvoiced speech in accordance with the decoded information". However, Su teaches, "wherein the method further comprises the step of classifying unvoiced speech in accordance with the decoded information" (Fig. 5, element 506, voice activity detector, where voice activity detector classify voiced speech and unvoiced speech signal in accordance with decoded information, more details at col. 5, lines 1-19). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use Su's teaching in the invention of Admitted known art because Su teaches his invention provides out put speech, sounds more natural to the human ear, a person with ordinary skill would readily recognized it as an advantage (col. 5, lines 27-28).

As per claims 3 and 4, the claim limitations are rejected based on the rationale given to claim 1 and 2 above and further the Admitted prior art does not explicitly teach, "wherein the identifying/classifying step comprises the step of performing identification/classification operation using a value obtained by averaging for a long term a variation amount based on a difference between the decoded filter coefficients and their long-term average". However, admitted prior art teaches, a smoothing coefficient

calculation circuit 1310 calculates an LSP variation amount $d_0(m)$ for each subframe m (voiced subframe and unvoiced subframe) using a value obtained by averaging for a long term a variation amount based on a difference between the decoded filter coefficients and their long-term average (specification, Page 6, line 17 to Page 7, line 11). Su teaches voice activity detector identify/classifying voice and non-voiced part based on the decoded linear predictive coefficients (col. 5, lines 1-19). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use LSP variation amount $d_0(m)$ for identifying/classifying voiced subframe and unvoiced subframe so that voiced and unvoiced classification perfectly obtained.

As per claims 7 and 8, the claim limitations are rejected based on the rationale given to claim 1 and 2 above and further the Admitted prior art does not explicitly teach, "the step of estimating pitch periodicity and power of the speech signal from the excitation signal and the decoded speech signal, and the identification/classifying step comprises the step of performing identification/classification operation using at least either one of the estimated pitch periodicity information and the estimated power". However, Su teaches, "the step of estimating pitch periodicity and power of the speech signal from the excitation signal and the decoded speech signal, and the identification/classifying step comprises the step of performing identification/classification operation using at least either one of the estimated pitch periodicity information and the estimated power" (col. 5, lines 1-19, particularly reads on "the speech signal 414 includes coded linear prediction coefficient, pitch coefficients,

fixed excitation code words and energy . . . decoder circuit 502 transmits synthesized speech signal to both adder circuit and the voice activity detector (VAD) circuit" where VAD circuit identifying/classifying the voiced speech and unvoiced speech based on the decoded information, in order to determine voiced and unvoiced speech VAD inherently estimating pitch periodicity and power of the decoded speech signal). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use Su's teaching in the invention of Admitted known art because Su teaches his invention provides out put speech, sounds more natural to the human ear, a person with ordinary skill would readily recognized it as an advantage (col. 5, lines 27-28).

As per claim 19, Admitted prior art teaches, "a speech signal decoding/encoding method/apparatus comprising the steps of":

"encoding a speech signal by expressing the speech signal by at least a sound source signal, a gain, and filter coefficients" (Fig. 5, elements 5110, 6220, 6120, 5520);

"decoding information containing a sound source signal, a gain, and filter coefficients from a received bit stream" (Fig. 4, element 10 encoded data, which contains sound source signal, a gain and filter coefficients from the bit stream);

"performing smoothing processing based on the decoded information for at least either one of the decoded gain and the decoded filter coefficients in the unvoiced speech" Fig. 4, element 1120, second gain decoding circuit and element 1020, LSP (filter coefficients) decoding circuit) ; and

"decoding the speech signal by driving a filter having the decoded filter coefficients by an excitation signal obtained by multiplying the decoded sound source signal by the decoded gain using a result of the smoothing processing" (Fig. 4, element 1020, LSP decoding circuit and element 1110, first gain decoding circuit).

Admitted prior art does not explicitly teach, "identifying voiced speech and unvoiced speech of a speech signal using the decoded information". However, Su teaches, "identifying voiced speech and unvoiced speech of a speech signal using the decoded information" (Fig. 5, element 506, voice activity detector, where voice activity detector identify voiced speech and unvoiced speech signal using the decoded information, more details at col. 5, lines 1-19). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use Su's teaching in the invention of Admitted known art because Su teaches his invention provides out put speech, sounds more natural to the human ear, a person with ordinary skill would readily recognized it as an advantage (col. 5, lines 27-28).

6. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Admitted prior art and Su (US 6,122,611) as applied to claims 2 above, and further in view of Well-known prior art (MPEP 2144.03).

As per claims 9, the claim limitations are rejected based on the rationale given to claim 2 above and further Su teaches, "wherein the classifying step comprises the step of classifying unvoiced speech by comparing a value obtained by the decoded filter coefficients" (col. 5, lines 1-19, particularly reads on "the speech signal 414 includes

coded linear prediction coefficient, pitch coefficients, fixed excitation code words and energy . . . decoder circuit 502 transmits synthesized speech signal to both adder circuit and the voice activity detector (VAD) circuit" where VAD circuit identifying/classifying the voiced speech and unvoiced speech based on the decoded information). However, Admitted prior art and Su do not explicitly teach, "wherein the classifying step comprises the step of classifying unvoiced speech by comparing a value obtained by the decoded filter coefficients with a predetermined threshold". Official Notice is taken on the well-known threshold value of filter coefficient. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use a predetermined threshold value of decoded filter coefficients to determine unvoiced speech so that perfectly unvoiced speech can be detected based on the predetermined threshold value.

7. Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Admitted prior art in view of Su et al. (US 6,122,611) as applied to claims 1 and 2 above, and further in view of Aoyagi et al. (US 5,752,223).

As per claims 5 and 6, the claim limitations are rejected based on the rationale given to claim 1 above and further the Admitted prior art teaches, "wherein the decoding step comprises the step of decoding information containing pitch periodicity and a gain of the speech signal from the received bit stream" (Fig. 4, element 1210 Pitch signal decoding circuit, and elements 1220 and 1120 first and second gain decoding circuits).

Admitted prior art does not explicitly teach, the step of decoding information containing a power of the speech signal from the received bit stream. However, Aoyagi

teaches, the step of decoding information containing a power of the speech signal from the received bit stream (Fig. 2, element 118 Power dequantizer). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to decoding power information of the speech signal from the received bit stream so that an optimum decoding of speech signal is obtained.

Admitted prior art and Aoyagi do not teach, "identifying/classifying step comprises the step of performing identification/classification operation using at least either one of the decoded pitch periodicity and the decoded power". However, Su teaches, "identifying/classifying step comprises the step of performing identification/classification operation using at least either one of the decoded pitch periodicity and the decoded power" (col. 5, lines 1-19, particularly reads on "the speech signal 414 includes coded linear prediction coefficient, pitch coefficients, fixed excitation code words and energy . . . decoder circuit 502 transmits synthesized speech signal to both adder circuit and the voice activity detector (VAD) circuit" where VAD circuit identifying/classifying the voiced speech and unvoiced speech based on the decoded information). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use Su's teaching in the invention of Admitted known art because Su teaches his invention provides out put speech, sounds more natural to the human ear, a person with ordinary skill would readily recognized it as an advantage (col. 5, lines 27-28).

Allowable Subject Matter

8. Claims 10-18 and 20 are allowed over the prior art of record.

Response to Arguments

9. The applicant argues as: "thus, even if one were to combine Su with applicant's prior art, it is completely unclear as to how one would make such modification and how one would incorporate the teaching of Su into application's admitted prior art. Moreover, there is simply no motivation in Su nor applicant's admitted prior art to combine the two references".

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Su is used here to show only identifying/ classifying step and the motivation as, Su teaches his invention provides out put speech, sounds more natural to the human ear, a person with ordinary skill would readily recognized it as an advantage (col. 5, lines 27-28).

The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

Conclusion

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Contact Information

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Abul K. Azad** whose telephone number is (703) 305-3838.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Richemond Dorvil**, can be reached at (703) 305-9645.

Any response to this action should be mailed to:

Commissioner for Patents

Washington, D.C. 20231

Or faxed to:

(703) 872-9314

(For informal or draft communications, please label "PROPOSED" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal
Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application should
be directed to the Technology Center's Customer Service Office whose telephone
number is **(703) 306-0377**.

Abul K. Azad

August 9, 2003



Richemond Dorvil
Primary Examiner